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| 20322 | 7590 | 02/24/2005 | EXAMINER | |
| SNELL & WILMER ONE ARIZONA CENTER 400 EAST VAN BUREN PHOENIX, AZ 850040001 | | | FAULK, DEVONA E | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2644 | |

DATE MAILED: 02/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/486,864

Applicant(s)

KAKUHARI ET AL.

Examiner

Devona E. Faulk

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2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-30 and 33 is/are pending in the application.
- 4a) Of the above claim(s) 1-20,31 and 32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21,23-24,29,30 is/are rejected.
- 7) ☒ Claim(s) 22,25-28 and 33 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

Response to Arguments

1. Applicant's arguments, filed 10/8/2004, with respect to the rejection(s) of claim(s) 21, 23, 24, and 29 under 102(b) and under 102(b) and 30 and 33 under 103(a) have been fully considered and are persuasive. Part of the applicant's argument regarding claim 22 is persuasive. The examiner agrees that Hayakawa and Greenberger fail to disclose the combination of the dipole sound source, the non-directional sound source and the signal processing circuit produce a radiated sound where substantially no direct sound reaches a location in the vicinity of a position of a passenger. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Zong, and Kehry.
2. Applicant's arguments, filed 10/8/2004, with respect to 112 rejection of claim 29 have been fully considered and are not persuasive. The 112 rejection of claim is maintained because of the term "desired".
3. Applicant's arguments filed 10/8/2004, have been fully considered but they are not persuasive. Regarding particularly the Greenberger reference, the applicant has asserted, on page 9, that Greenberger address the problems associated with a listener moving around a room but fails to address the problems of listeners in a vehicle. The examiner disagrees. Greenberger also addresses the problems associated with listeners in a vehicle (See Figures 21A-21E; column 89, line 39-column 93, line 19).

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Claim Rejections - 35 USC § 112

4. Regarding claim 29, the phrase "desired bent shape" renders the claim indefinite because it is unclear, particularly the word desired. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zong et al. (EP 0 239 914) in view of Kehry (DE 38 44 572).

Regarding claim 21, Zong discloses an on-vehicle sound amplification device located outside a vehicle (electronic loudspeaker system including an amplifier that is mounted externally to a transport vehicle and can be used for public addressing. See abstract; column 2, lines 2-12; claim 1) comprising a loudspeaker, signal processing means (3, Figure 1) for amplifying an acoustic signal and then inputting an output thereof to the loudspeaker. Zong further teaches of an indicating lamp connected to the driver operation switch (sound level control switch) that will turn on when the sound level is very high so that the policeman or whomever the driver is can monitor the

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sound level (column 4, lines 37-46). He further teaches that the loudspeaker arrangement promotes safe driving (column 4, lines 55-57). It is obvious than that sound internal to the vehicle is not equal and less than the sound outside the vehicle. Zong fails to disclose that the loudspeaker system is a dipole speaker. However the concept of a dipole speaker on a vehicle was well known in the art as taught by Kehry. Kehry discloses roof-mounted dipole speakers (Figure 2).

Speakers 11 and 13 are dipole speakers. The axis of radiation of the speakers extends at least in horizontal direction beyond the inherent passenger compartment which reads on at least one acoustic radiation axis thereof is directed outwardly from a vehicle interior. It would be obvious to use Kehry's concept of dipole speakers mounted outside a vehicle in order to emit sound in rearward and forward directions.

6. Claims 23,24 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zong et al. (EP 0 239 914) in view of Kehry et al. (DE 38 44 572) in further view of Hayakawa (JP 06-072253).

Claim 23 claims the on-vehicle amplification apparatus according to claim 21, wherein the dipole sound source includes at least two loudspeakers wherein the at least two loudspeakers are arranged so that respective acoustic radiation planes thereof are directed opposite to each other; and the signal processing means variably controls a phase of an input to at least one of the loudspeakers included in the dipole sound source. Zong as modified by Kehry reads on the loudspeakers arranged as claimed. Zong as modified fails to disclose a signal processing means as claimed. Regarding claim 23,

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Hayakawa teaches of a signal processing means that controls a phase as claimed (phase of the signal to each sound source changes with the signal processing means (page 2, paragraph 10)). It would have been obvious to one of ordinary skill in the art at the time of the invention to use Hayakawa's concept of a signal processing means controlling the phase in order to control the location of sound image.

Claim 24 claims the on-vehicle amplification apparatus of claim 23, wherein each of the at least two loudspeakers included in the dipole sound source has an acoustic tube whose cross-sectional area along a direction perpendicular to a sound wave traveling direction varies continuously; the acoustic tubes of the respective loudspeakers are arranged so that respective acoustic radiation planes thereof are directed opposite to each other; and a radiated sound from the loudspeaker which is driven by an output from the signal processing means is radiated by being guided along the acoustic tube. Regarding claim 24, Hayakawa teaches of dipole sound sources are each horn speakers (11a,11b; 12a,12b) (page 2, paragraph 24). The horn speakers read on "acoustic tubes" as claimed. All elements of claim 24 are comprehended by claim 23. Therefore, claim 24 is rejected for reasons given above apropos of claim 23.

Claim 29 claims the on-vehicle amplification apparatus according to claim 24, wherein the acoustic tube of each of the at least two loudspeakers included in the dipole sound source is formed of a sound path having a desired bent shape. Regarding claim 29, it is interpreted that the acoustic tube or horn is formed of a sound path

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having a desired bent shape. All elements of claim 29 are comprehended by claim 24. Therefore, claim 29 is rejected for reasons given above apropos of claim 24.

7. Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zong et al. (EP 0 239 914) in view of Kehry et al. (DE 38 44 572) in further view of Hayakawa (JP 06-072253) in further view of Dodge (U.S. Patent 4,460,061).

Claim 30 claims the on-vehicle sound-amplification apparatus of claim 24, wherein the at least two loudspeakers included in the dipole sound source are arranged so that an interval between the respective acoustic radiation planes included in the acoustic tubes of the loudspeaker s is less than or equal to approximately $\frac{1}{2}$ of the wavelength of the reproduced sound. As stated above apropos of claim 24, Zong as modified by Kehry and Hayakawa meets all elements of that claim. Therefore, the combination meets all elements of claim 29 with the exception of the claimed matter. Dodge discloses an apparatus of increasing the directivity of a sound source. He further teaches in Figure 1 of two sources spaced vertically by approximately $\frac{1}{2}$ (column1, lines 60-63; column 2, lines 18-34). Thus it would have been obvious to have the loudspeakers arranged as claimed in order to increase the signal intensity of the sound sources.

Claim Objections

9. Claims 22,25-28,33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in

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independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 3,271,735 to Gossweiler

U.S. Patent 4,192,216 to Wait

U.S. Patent 3,579,184 to Forestal

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Devona E. Faulk whose telephone number is 703-305-4359. The examiner can normally be reached on 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on 703-305-4040. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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SINH TRAN
SUPERVISORY PATENT EXAMINER